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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/735,166	12/12/2000	David A. Mantell	XXT-056	5417

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EXAMINER
MOUTTET, BLAISE L

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 07/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/735,166	MANTELL, DAVID A.	
	Examiner	Art Unit	
	Blaise L Mouttet	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 June 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,5,9,10,14-21 and 24-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,5,9,10,14-21 and 24-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 December 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on June 11, 2002 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 10, 14, 17, 19, 22-24, 29, 30 and 33 are rejected under 35 U.S.C. 102(b) as being anticipated by Norum et al. US 5,923,344.

Norum et al. discloses, regarding claim 14, a method of forming an image with a printhead comprising:

discharging a first and second set of ink droplets from the printhead onto a print medium to form an image (figure 3 and figure 8, step 42);

determining differences in distance between the first set of ink droplets and the second set of ink droplets once deposited onto the print medium (column 5, lines 52-55, column 6, lines 3-14 and figure 8, step 42);

updating, by a user, compensation values (the dot shift value) based on the determined differences between the first set of ink droplets and the second set of ink droplets (column 6, lines 3-14 and figure 8, step 43); and

controlling a subsequent discharge of the ink droplets from the printhead based on the updated compensation values (column 6, lines 11-14 and figure 8, step 44).

Norum et al. discloses, regarding claim 17, an image forming system comprising:

a printhead (as shown in figure 2);

a processor (12, figure 2) for controlling the printhead (column 3, lines 46-61);

a printhead facility (11, figure 2) coupled to the processor (12) for controlling the printhead based on differences between a parameter of a first ink droplet and a parameter of a second ink droplet measured after formation of an image on an imaging medium (column 3, lines 16-35, column 3, line 62 - column 4, line 9), the printhead facility (11) including:

a data file (22) including a plurality of compensation values used to control operation of the printhead (column 3, lines 27-35), and

a compensation adjustment mechanism configured to permit a user to update the compensation values stored in the data file (22) (column 6, lines 3-14).

Norum et al. discloses, regarding claim 24, a printhead signature correction method comprising:

generating, at the time of manufacture of the printhead, a data file (22) of ink drop compensation values used to control operation of the printhead (figure 7, steps 31-35);

discharging ink droplets in a predetermined manner from the high resolution printer system to form a test image on an image medium (figure 7, step 32);

determining positional differences between droplet distance from a reference point for a first ink droplet and a second ink droplet (figure 7, step 32, column 5, lines 52-64);

deriving updated ink droplet compensation values for the ink droplets based on the positional differences (figure 7, step 35);

adjusting, by a user, the ink droplet compensation values stored in the data file (figure 8, steps 42 and 43);

generating an updated data file (22) including the adjusted ink droplet compensation values (figure 8, step 45); and

regulating the printing operation by use of the compensation values stored in the updated data file (22) (column 6, lines 12-14).

Regarding claim 10, the method of Norum adjusts a direction of ink drop firing based on the compensation values (see figure 3).

Regarding claims 19 and 22, the discharge is varied based on the differences between ink drop positions to align the print dots (column 3, line 62 - column 4, line 9).

Regarding claim 23, the printhead comprises a plurality of ejectors (column 3, lines 33-35).

Regarding claim 29, see column 3, lines 62-64.

Regarding claim 30, see column 5, lines 1-10.

Regarding claim 33, see column 6, lines 3-14.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 2, 5, 16, 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norum et al. US 5,923,344 in view of Stanley et al. US 5,212,497.

Norum et al. fails to disclose measuring the velocities of the ink droplets discharged relative to one another, generating an ink droplet velocity profile from the measured differences and compensating for any differences in the velocities.

Stanley et al. discloses measuring ink droplet velocities of arrays of drop ejectors utilizing an optical detector 102 and having a user enter shifting data to compensate for deviation of drop velocities in the array (column 6, lines 33-62).

It would have been obvious for a person of ordinary skill in the art at the time of the invention to measure the velocities of the ink droplets of Norum et al. discharged relative to one another and generate an ink droplet velocity profile from the measured differences and correct for the measured differences as taught by Stanley et al.

The motivation for doing so would have been to provide a method and system that tunes a print head so that all of the orifices eject ink droplets at velocities within an acceptable range to prevent printing defects as taught by column 2, lines 8-11 of Stanley et al.

4. Claims 9, 15 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norum et al. US 5,923,344 in view of Niikura et al. US 5,576,744.

Norum et al. fails to disclose determining an air gap distance between the imaging medium and the printhead and controlling the ink discharge timing based on the air gap distance.

Niikura et al. teaches acquiring distance information between a printhead and a print medium and using this information to adjust ink discharge timing (column 6, lines 30-42).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to determine an air gap distance between the imaging medium and the printhead disclosed by Norum et al. and use this information to control ink discharge as taught by Niikura et al.

The motivation for doing so would have been to prevent the formation of a faulty image due to a variable air gap (such as when printing on a curved drum) as taught by column 14, line 66-column 15, line 8 of Niikura et al.

5. Claims 25-28, 31, 32 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Norum et al. US 5,923,344 in view of Gast et al. US 6,367,903.

Norum et al. discloses, regarding claim 31, that the determination of the ink drop positions is accomplished by the use of human vision (column 2, lines 17-22, column 6, lines 3-14).

Norum et al. fails to disclose, regarding claims 25-28, 32 and 34, grouping the ink ejectors into sets of grouped ink ejectors and adjusting the ejectors on a group by group basis to reduce drop placement errors to be less than 4 microns.

Gast et al. discloses grouping ink ejectors into sets of grouped ink ejectors (i.e. primitives P1-P14 as shown in figure 3) and adjusting the ejectors on a group by group basis to reduce drop placement errors to be less than 4 microns (column 3, lines 35-46, column 6, lines 49-58).

It would have been obvious to a person of ordinary skill in the art at the time of the invention to group the ejectors in the printhead of Norum et al. as taught by Gast et al. and align the ejector groups on a group by group basis as taught by Gast et al.

The motivation for doing so would have been to prevent the skew and line waver printing defects illustrated in figure 8B as taught by column 3, lines 35-46 of Gast et al.

Response to Arguments

6. Applicant's arguments filed June 11, 2002 have been considered but are moot in view of the new ground(s) of rejection.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Blaise Mouttet whose telephone number is (703) 305-3007. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow, Jr. Art Unit 2853, can be reached on (703) 308-3126. The fax phone number for the organization where this application or proceeding is assigned is (703) 305-3432.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Blaise Mouttet July 3, 2002

BM 7/3/2002

John Barlow
Supervisory Patent Examiner
Technology Center 2800